DOCUMENT RESUME

ED 290 550 PS 017 095

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TITLE Peer Competence and Mother-Child and Child-Child Interactions in One-Year-Olds.
PUB DATE Jul 87
NOTE 13p.; Paper presented at the Biennial Meeting of the International Society for the Study of Behavioural Development (9th, Tokyo, Japan, July 12-16, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cooperation; Factor Structure; Foreign Countries; *Infants; Longitudinal Studies; *Mothers; Observation; Parent Child Relationship; *Parent Influence; *Peer Relationship; Predictor Variables; *Social Behavior; Videotape Recordings
IDENTIFIERS *Dominant Behavior; Dyadic Interaction Analysis; Netherlands

ABSTRACT

As part of a longitudinal study of the predictors of preschool-aged children's peer relationships, data were collected on the social behavior of 1-year-olds. Participating in the study were 48 mother-child dyads. Individual and comparison data were gathered through observation and videotape recordings in laboratory dyadic play sessions involving peers with mothers present, and home observation of mother-child interactions. Time records were kept of infants' exposure to persons other than family members. Mothers completed Rothbart's (1978) Infant Behavior Questionnaire. Factor analysis revealed two factors in infants' social behavior, dominance and cooperation, which were very similar to "like least" and "like most" sociometric nominations in later years. Factor scores on cooperation and dominance were correlated with observed interactive and orientation behavior of the target person and his or her partners in dyadic play sessions. Furthermore, factor scores on cooperation were related to mothers' responsiveness at home and in dyadic play sessions. Dominance was related to more involvement of mothers in peer play. Exposure to peers and to older children was differentially related to dominance and cooperation. Temperament appeared to be a minor factor in peer competence. (RH)

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PEER COMPETENCE AND MOTHER-CHILD AND CHILD-CHILD INTERACTIONS IN ONE-YEAR-OLDS[1]

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Abstract

This paper reports data at age 1 year of a longitudinal study over the age period 1 to 4,5 year. In this study it is investigated what antecedents at the ages 1, 2, and 3,5 years best predict peer relations at 4,5 years. Similarly, these relations are investigated at each separate age level.

After children have played in four dyadic play sessions with 4 different partners, the behavior of the target child and its partner was pairwise compared by its mother, the partner's mother and two observers at 7 criteria, e.g. nice, cooperative, disruptive, starts fights, shy, bossing and calm. Factor analysis revealed two factors, e.g., dominance and cooperation. The structure of these factors was very similar to 'like least' and 'like most' sociometric nominations in later years.

Factor scores on cooperation and dominance were correlated with observed interactive and orientation behavior of the target person and his/her partners in the dyadic play sessions.

Furthermore, factor scores on cooperation were related with mothers' responsiveness at home and in dyadic play sessions. Dominance was related with more involvement of mothers in peer play. Also exposure to peers and to older children was differentially related to dominance and cooperation. Temperament of the child appeared to be a minor factor in peer competence.

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PS 017095

[1] Paper presented in the Symposium "Peer relationship and social skills in childhood: Psychological and ethological perspectives" chairs: G. Attili & K.H. Rubin. Ninth Biennial Meetings of the International Society for the Study of Behavioral Development, Tokyo, Japan July 12-16, 1987.

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Social relations as assessed with sociometric measures reveal significant stability over subsequent years from age 4 onwards and even over several years during elementary school and in high school (cfr. Hartup, 1983). Sociometric nominations on several criteria such as cooperation, disruption, starting fights etc., reveal particular patterns related to acceptance as expressed in 'like most' nominations and rejection as expressed in 'like least' nominations (Coie et al., 1982; see table 1). A childs peer relationships are important predictors of his/her later adaptation and problem behavior (cfr. Hartup, 1983).

The purpose of our longitudinal study over the age period from 1 to 4 1/2 years is to investigate what antecedents (predictors) at the ages 1, 2, and 3 1/2 years best predict peer relations as assessed in sociometric measures at 4 1/2 years in kindergarten (criterion). In addition, at each age of measurement the relationship between predictors and peer competence will be assessed. This paper reports results at the age of 1 year.

Several theoretical perspectives on the development of peer relations are available. Some theoretical approaches stress the effect of child characteristics such as a child's temperament or irritability; others emphasize factors in the child's environment. The 'parallel theory' suggests that peer relations qualitatively differ from parent- child relations, have a different developmental course and originate in experiental learning in early peer interactions. According to the 'differential theory' early parent-child interactions are the basis for later relationships including peer relations and friendships (Maccoby & Masters, 1972).

At the age of 1 year the subjects played in the presence of their mothers in subsequent weeks in 4 dyadic play sessions, per session with a different partner. After the session the target child and the partner were pairwise compared by its mother, the partner's mother and two observers on 7 items derived from sociometric nominations proposed by Coie et al. (Standardized Behavioral Descriptions, 1982), e.g., who is more kind, cooperative, disruptive, shy ,starting fights, bossing and calm. The pairwise comparison data are used as the criterion at age 1.
The play sessions were videotaped. The interactive behavior of the target person and the partner were independently observed and related to the pairwise comparison data. In addition, mother-child interactions were

observed at home and during the four play-sessions, the temperament of the child was assessed by the parents using the Infant Behavior Questionnaire (Rothbart, 1978) and the exposure to agemates and older children was assessed by the mother over a period of one week using a time record diary method.

METHOD

Subjects:
Subjects were 48 mother-child dyads (first-borns; 24 girls and 24 boys), aged 12 months, (range 11.0 to 13.0 month) selected from municipal records.
Procedure:
Home observations: Mother-child interactions were observed for 30 minutes at home during free play. Mother and child were in the same room. Mother's behavior was observed in terms of her responsiveness to the child in the following categories:

- Responsiveness: ratio of mother's responses to the child's signaling behavior directed at his/her mother
- Associative: mother initiates behavior in absence of the child's signaling behavior. Mother's initiative fits into the child's ongoing activity.
- Initiatives of mother: mother initiates behavior that does not fit in the child's ongoing activity.

Laboratory sessions: In 4 subsequent weeks same sex pairs of children and their mothers came to the laboratory for a play sessions, each session with a different partner. Each session had three episodes, (1) play without play material (3 minutes), (2) play with several toys (20 minutes), (3) mother guided interactive games, e.g. roll a ball to other child (3 minutes).
Pairwise comparisons: After the sessions each mother and both observers pairwise compared both children on 7 items adapted from the Standardized Behavioral Descriptions (Coie et al., 1982). The items had the following format: Which child was most kind in this session? Child A, Child B, Same. The items were: kind, cooperative, disruptive, shy, starts fights, bossing, calm. The items 'help seeking' and 'offering help' could not reliably be filled out and were disregarded.
Mother-child interactions: Mother-child interactions were observed from videotapes. The same categories were used as in the home observations.
Peer interactions: Each child's behavior was independently observed from videotapes on the following categories:
Social behavior:
Touching, Negative and Positive Overtures to the Other Child, Activity (positive) with the Same Toy, Positive and Negative Reactions to Other Child, Avoidance. Separate factor analyses were run on the target child's behavior and the aggregated partner's behavior. The following orthogonally rotated factors were found in the target child's behavior:
Factor 1: Touching / Negative Overtures (Explained Variance: 30.8%)

Factor 2: Positive Overtures / Same Toy (Explained Variance: 17.8%)
Factor 3: Positive Reactions (Explained Variance: 15.7%)
For the partner's behavior the following orthogonally rotated factors were found:
Factor 1: Negative Reactions / Avoidance (Explained Variance: 27.2%)
Factor 2: Positive Overtures and Reactions (Explained Variance: 20.2%)
Factor 3: Negative Overtures (Explained Variance: 15.7%)
Childrens visual and spatial orientation:
Proximity to Peer, Proximity to Mother, Looking to Peer, Looking to Mother, Active Play, Passive. The orthogonally rotated factors in the child's visual and spatial orientation were:
Factor 1: Proximity to Mother (Explained Variance: 43.6%)
Factor 2: Looking to Partner (Explained Variance: 24.6%)
Factor 3: Looking to Mother (Explained Variance: 17.0%)
The following rotated factors were found in de visual and spatial orientation of the partners:
Factor 1: Proximity and Looking to Mother/Passive (Explained Variance: 44.6%)
Factor 2: Looking to Partner (Explained Variance: 21.3%)
Factor scores on the factors were used as scores on the respective variables.

Exposure to other children: Mothers kept a time record diary during one week, specifying per 15 minutes whether the child had exposure to non-family members, i.e. peers (6 months younger or older children), older children up to 12 years of age, persons older than 12 years.

Temperament: Mother filled out the Infant Behavior Questionnaire (IBQ, Rothbart, 1978). The IBQ contains the following subscales:
- Activity level
- Distress to novel stimuli
- Distress to limitations
- Smile/laughter
- Duration of orientation
- Soothability

RESULTS

Pairwise Comparisons of Standardized Behavioral Descriptions

Principal component factor analyses were performed with orthogonal varimax rotation on the separate pairwise comparisons by the target child's mother, the partners' mothers and both observers. Data were aggregated over the four sessions. Since very similar factor structures were found in all three rater types data were aggregated for the final factor analysis over all raters. The resulting factor structure can be seen in Table 1 (right panel). The middle panel of Table 1 contains the original correlations of the 7 items

of the Standardized Behavioral Descriptions Scores with 'like least' and 'like most' scores as presented by Coie et al. (1982).

Insert Table 1 here

The resulting rotated factor structure revealed remarkable similarity with the correlational patterns of the 'like least' and 'like most' nominations presented by Coie et al. Since our data represent evaluations by adults and not peer nominations we have used different names for the factors, e.g. Dominance and Cooperation. Both factors Dominance and Cooperation were characterized by low levels of shyness. More dominant children were evaluated as less kind, more bossing, more disruptive and more often starting fights. More cooperative children were evaluated as more kind, remaining calm and cooperative.

Summarizing, it appeared that the constructs of acceptance and rejection as described by Coie et al. in 9-14-year-olds can readily be observed by mothers and observers in dyadic play of one-year-olds. The same correlational pattern as assessed by Coie et al in 9-14 year olds was found in sociometric nominations by 4-6 year-olds by Prins et al. (1986). Thus, it appears that the criterion behavior for our longitudinal project at age 4,5 years can be assessed in one year old children.

Peer interactions and Dominance and Cooperation

Two stepwise analyses of regression were computed with Dominance and Cooperation as dependent variables and Social Behaviors of the Target Person and of the Partners, Visual/Spatial Orientation of the Target Person and of the Partners, and Sex as independent predictor variables.

Insert Tabel 2 here

The adjusted explained variance was .57 and .51 in Dominance and Cooperation, respectively. Behaviors and orientations in the target person as well as elicited behaviors and orientations in the partners are significantly correlated with Dominance and Cooperation.

Dominance and Cooperation have some relations in common, others are unique. Dominance as well as Cooperation are positively correlated with Touching and Negative Overtures and negatively with Onlooker Behavior of the Target Person. Both Dominance and Cooperation elicited Negative Reactions and Avoidance as well as Onlooker Behavior from the Partners.

Dominance specifically correlates with more Positive Reactions and evokes less Negative Overtures from the Partners. Cooperation correlates with more Positive Overtures and Activities with the Same Toy and with less Proximity to Mother and less Passive Behavior.

Summarizing, more dominant as well as more cooperative children appear to be outgoing and elicit somewhat reserved and even defensive reactions in partners. More dominant children appear to behave more reactive and elicit fear in partners. More cooperative children use toys to initiate positive contacts and easily move out of their mothers's vicinity.

Child characteristics, Exposure to Peers, Mother-Child Interaction, and Dominance and Cooperation

Again two analyses of regression were executed on Dominance and Cooperation as dependent variables with Mother-Child Interaction at home and in the play sessions, Exposure to other Children and Temperament as independent predictor variables.

Insert Table 3 here

The adjusted explained variance was less than in the peer interactions, i.e. .34 and .41 in Dominance and Cooperation, respectively. This set of predictor-variables are more discriminative between Dominance and Cooperation than the variables on peer interactions.

Dominance is related to Associative behaviors of mothers during the play sessions and with more exposure to peers. More dominant children are evaluated by their parents as more easily soothable.

Mothers of more cooperative children are more responsive at home as well as during the play sessions in the laboratory. More cooperative childeren have mothers who refrain from interference in the play activities of their child. They have less exposure to older children.

DISCUSSION

A most remarkable finding of this part of our longitudinal project is the full blown presence in the dyadic play of 1-year olds of the orthogonal constructs of dominance and cooperation. Even at this early age these constructs are equally well recognized by the child's own mother and mothers of playmates as by psychologically trained observers. A second and related finding is the apparent similarity of dominance and cooperation with later peer evaluation of rejection and acceptance. From age 4 onwards the latter two dimensions are consistently found in evaluations of peer competence by agemates.

Dominance and cooperation have a common opposite in shyness. Similarly, acceptance and rejection are only moderately negatively correlated and are both distinguished from sociometrically neglected children. Thus, continuity in the constructs of dominance/rejection and cooperation/acceptance may be expected to be found. However, also some discrepancies between the early and later forms of these constructs are manifest For example, shyness in itself is not the opposite of later acceptance and rejection while it has negative loadings on both dominance and cooperation in one-year-olds.
Several correlates in early interaction are similar for Dominance and Cooperation. Dominant as well as cooperative children are outgoing and other-oriented. Therefore, a second difference between early and late manifestations of the constructs is the seemingly adaptive meaning of dominance and the rather maladaptive character of later rejection by peers. However, even in one-year-olds cooperative children offer an impression of self-regulation and autonomy. Cooperative children remove themselves easily from their mothers vicinity in a strange environment and initiate overtures to other children using toys as object of communication.

Dominant one-year-olds more readily interfere in the intimate spheres of the other by grabbing the other child and, thus, eleciting fear and avoidance of negative overtures in the partner.

The support of children's autonomy is manifest in the behavior of mothers of more cooperative children. At home as well as in play sessions these mothers appear to be very sensitive for their children's signaling behavior and they are apt to respond to these signals. At the other hand, they refrain from unprovoked interference in their children's play with agemates. For more cooperative children exposure to peers seems irrelevant while exposure to older children seems to have a negative effect. Thus, experiential learning from peers does not seem to be an important candidate for the development of cooperative peer interaction at the age of one year.

Mothers of more dominant children tend to get involved in their children's play activities with agemates. Without a clear indicated need by their children these mothers join into the interaction of the children. In general, these mothers are more actively involved ($r = .25$, $p < .05$) while mothers of more cooperative children are less active ($r = -.26$, $p < .05$) in the play sessions.

The significant relationship between dominance and exposure to peers is in agreement with findings by Patterson, Littman & Bricker (1967). They found that a subgroup of 'socially active' nursery school children in a few weeks after their school entrance developed a strategy to react with counter aggression upon victimization and attacks by agemates. The aggressive interaction of the children who were non-interactors remained at a low rate.

Percieved temperament by parents does not seem to be an important factor in peer competence. However, the only significant finding seems paradoxical: more dominant children are reported by their parents as easy to sooth. It may be that more dominant children need more soothing because they are more often involved in negative incidents. Their parents may than report that they are easy to sooth, while this behavior is irrelevant in more cooperative children.

Although in general the correlation patterns of boys and girls are much the same, some sex differences were found at this age in the relations between the investigated predictors and criteria. These differences will not be reported in this paper.
Whether one-year-old girls were more or less dominant or cooperative than boys could not be assessed in this study since girls were compared with girls and boys with boys in the paired comparisons.

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TABLE 1

CORRELATIONS OF BEHAVIORAL DESCRIPTONS SCORES TO LIKE MOST AND LIKE LEAST SCORES IN 9-14 YEAR OLDS (COIE ET AL. 1982, P 560) AND ROTATED FACTOR STRUCTURE OF PAIRWISE COMPARISONS IN 1-YEAR-OLDS (THIS STUDY)

	CORRELATIONS (COIE ET AL., 1982)		ROTATED FACTOR STRUCTURE (THIS STUDY)	
	LIKE LEAST	LIKE MOST	FACTOR I DOMINANCE	FACTOR II COOPERATION
ITEMS:				
LIKE MOST / KIND	-.21*	----	-.67	.61
COOPERATIVE	-.31*	.51*	.19	.79
DISRUPTIVE	.78*	-.07	.89	.06
SHY	-.05	-.12	-.59	-.72
STARTS FIGHTS	.70*	-.02	.83	-.05
BOSSING	----	----	.92	.25
CALM	-.28*	.43*	-.16	.92
EXPLAINED VARIANCE:			46.7%	33.4%

* P < .01 (N=311)

TABLE 2

CORRELATIONS OF PEER INTERACTIONS DURING DYADIC PLAY SESSIONS AND FACTOR SCORES ON PAIRWISE COMPARISONS

	DOMINANCE	COOPERATION
BEHAVIOR TARGET PERSON (FACTORS):		
- TOUCHING / NEGATIVE OVERTURES (A)	.54**	.32*
- POSITIVE OVERTURES / SAME TOY	-.20	.30*
- POSITIVE REACTIONS (A)	.27*	-.15
VISUAL / SPATIAL ORIENTATION TARGET PERSON (FACTORS):		
- PROXIMITY MOTHER / PASSIVE (B)	-.07	-.46**
- LOOKING TO PARTNER (B)	-.38**	-.39**
- LOOKING TO MOTHER (B)	.20	-.09
BEHAVIOR PARTNERS (FACTORS):		
- NEGATIVE REACTIONS / AVOIDANCE	.49**	.37**
- POSITIVE OVERTURES AND REACTIONS	.11	.03
- NEGATIVE OVERTURES (A)	-.37**	.11
VISUAL / SPATIAL ORIENTATION PARTNERS (FACTORS):		
- ORIENTATION TO MOTHER / PASSIVE (B)	-.17	.16
- LOOKING TO TARGET PERSON (A,B)	.42**	.37**
SEX:	----	----
ADJUSTED R-SQUARE	.57**	.51**

* $P < .05$

** $P < .01$

(A) SIGNIFICANT CONTRIBUTION IN STEPWISE ANALYSIS OF REGRESSION ON DOMINANCE

(B) SIGNIFICANT CONTRIBUTION IN STEPWISE ANALYSIS OF REGRESSION ON COOPERATION

TABLE 3

CORRELATIONS OF MOTHER-CHILD INTERACTIONS, TEMPERAMENT, AND EXPOSURE TO OTHER CHILDREN WITH FACTOR SCORES ON PAIRWISE COMPARISONS

	DOMINANCE	COOPERATION
MOTHER-CHILD INTERACTION (HOME; CATEGORIES):		
- RESPONSIVENESS (B)	-.10	.42**
- ASSOCIATIVE RESPONSES MOTHER	.10	.08
- INITIATIVES MOTHER	.07	-.03
MOTHER-CHILD INTERACTION (PLAY SESSIONS; CATEGORIES):		
- RESPONSIVENESS	-.02	.33*
- ASSOCIATIVE RESPONSES MOTHER	.27*	.07
- INITIATIVES MOTHER (B)	.16	-.36**
EXPOSURE TO OTHER CHILDREN:		
- PEERS	.37**	-.19
- OLDER CHILDREN (UP TO 12 YEARS) (B)	.03	-.46**
INFANT BEHAVIOR QUESTIONNAIRE (IBQ)		
- ACTIVITY LEVEL	.22	-.05
- DISTRESSTO NOVEL STIMULI	-.17	-.16
- DISTRESS TO LIMITATIONS	.01	-.06
- SMILE / LAUGHTER	.00	-.05
- DURATION OF ORIENTATION (A)	-.17	-.07
- SOOTHABILITY (A)	.49**	-.12
SEX:	----	----
ADJUSTED R-SQUARE	.34**	.41**

* $P < .05$

** $P < .01$

(A) SIGNIFICANT CONTRIBUTION IN STEPWISE ANALYSIS OF REGRESSION ON DOMINANCE

(B) SIGNIFICANT CONTRIBUTION IN STEPWISE ANALYSIS OF REGRESSION ON COOPERATION